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10/077,777	02/20/2002	Shigeki Matsuda	111995	3646

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EXAMINER	
WONG, EDNA	

ART UNIT	PAPER NUMBER
1753	5

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/077,777	MATSUDA ET AL.
	Examiner	Art Unit
	Edna Wong	1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-15 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-15 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because:

(a) the abstract is more than one paragraph and more than 150 words;

(b) the word "said" is used in lines 12-13, 16, 18 and 26.

Correction is required. See MPEP § 608.01(b).

Claim Objections

Claims **1, 3-4 and 9** are objected to because of the following informalities:

Claim 1

line 5, the word "by" should be amended to the phrase -- comprising the steps of --.

line 7, the word -- article -- should be inserted after the word "material".

Claim 3

line 4, it is suggested that the word -- a -- be inserted after the word "performing".

Claim 4

line 4, it is suggested that the word -- an -- be inserted after the word "in".

line 7, the word "dissolve" should be amended to the word -- dissolves --.

Claim 9

line 12, the word "gas" should be amended to the word -- gases --.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims **1-15** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

lines 5-24, the preamble of the claim recites "An **electrolytic** phosphate chemical treatment method". However, the body of the claim does not recite an electrolytic

method step such as electrolytically treating the article. Therefore, the body of the claim is inconsistent with its preamble.

line 5, it appears that the "electrolytic treatment" is the same as the electrolytic phosphate chemical treatment recited in claim 1, line 1. However, it is unclear if it is. If it is, then it is suggested that the word -- the -- be inserted after the word "performing".

lines 5-7, it is unclear what the sequence of steps is in "performing electrolytic treatment on said article **to be treated** in a phosphate chemical conversion treatment bath". Is first: the article electrolytically treated, and then, second: the electrolytically treated article is treated in a phosphate chemical conversion treatment bath? That's what the claim limitation sounds like.

line 9, the alternative expression of the Markush group is improper. MPEP 2173.05(h). The word "and" should be deleted because the word "and" already shows up (claim 1, line 11) before the last component in the bath.

lines 10-11, it appears that the "phosphate ions in said phosphate chemical treatment bath" are the same as those recited in claim 1, lines 9. However, it is unclear if they are. If they are, then it is suggested that the word -- the -- be inserted after the word "with".

lines 13-14, it appears that the "ions dissolved in said phosphate chemical treatment bath" are the same as the metal ions recited in claim 1, line 11. However, it is unclear if they are. If they are, then it is suggested that the word -- the metal -- be inserted after the word "which".

line 15, it is unclear how the "metal ions ... is equal to or greater than -830 mV".

line 16, "the solvent" lacks antecedent basis. See also claim 2, line 11.

line 17, it is unclear what is meant by "in the form of water". What form is this? See also claim 2, line 12.

lines 17-18, when is the value equal to or greater than -830 mV, which is the cathodic reaction decomposition potential of the solvent, indicated as the hydrogen standard electrode potential? See also claim 2, lines 12-13.

line 21, "(oxidation-reduction potential)" is indefinite. It is unclear whether the narrower limitation in the parentheses is, in fact, a claim limitation. It is suggested that "ORP (oxidation-reduction potential)" be amended to -- oxidation-reduction potential (ORP) --.

lines 22-23, "(indicated as the potential relative to a standard hydrogen electrode)" is in definite. It is unclear whether the narrower limitation in the parentheses is, in fact, a claim limitation.

Claim 2

line 3, the words "preferably uses" are indefinite.

lines 3-4, "the electrode material that dissolves in the treatment bath" lacks antecedent basis.

lines 4-6, it is unclear what is the relationship between "a metal that forms a complex with phosphoric acid and phosphate ions in the phosphate chemical bath" and the metal ions that form a complex with phosphate ions in said phosphate chemical treatment bath (from claim 1, lines 10-11).

lines 4-5, it appears that "a complex" is the same as that recited in claim 1, line 10. However, it is unclear if it is.

line 5, it appears that the "phosphoric acid" is the same as that recited in claim 1, line 9. However, it is unclear if it is.

line 5, it appears that the "phosphate ions" are the same as those recited in claim 1, line 9. However, it is unclear if it is.

line 6, the alternative expression of the Markush group is improper. MPEP 2173.05(h). The words "and/or" should be deleted and replaced with a -- , -- (comma) because the word "and" already shows up (claim 2, line 13) before the last species in the Markush group.

lines 6-13, it is unclear what is the relationship between "a metal material for which the dissolution-precipitation equilibrium potential at which ions dissolved in the phosphate chemical treatment bath are reduced and precipitate as metal is greater than or equal to -830 mV" and the "metal ions for which the dissolution-precipitation equilibrium potential at which ions dissolved in said phosphate chemical treatment bath are reduced and precipitate as metal is equal to or greater than -830 mV" (from claim 1, lines 11-15).

line 8, it appears that the "ions" are the same as those recited in claim 1, line 13. However, it is unclear if they are.

line 10, it appears that the "metal" is the same as that recited in claim 1, line 15. However, it is unclear if it is.

line 13, the alternative expression of the Markush group is improper. MPEP 2173.05(h). The word "and" should amended to the word -- or --.

line 14, it appears that the "electrolysis" is the same as the electrolytic phosphate chemical treatment method recited claim 1, lines 1-2.

Claim 3

line 2, it is unclear what is meant by "either claim 1".

lines 2-4, "the amount of Fe ions dissolved into the treatment bath from an Fe electrode" lacks antecedent basis.

line 4, it appears that the "cathodic treatment" is further limiting the electrolytic treatment recited in claim 1, line 5. However, it is unclear if it is.

line 5, it appears that "an Fe electrode" is the same that recited in claim 3, lines 3-4. However, it is unclear if it is.

lines 5-6, "the electrode that dissolves in the treatment bath" lacks antecedent basis.

Claim 4

lines 2-3, "the case where the article to be treated is a steel material" lacks antecedent basis.

lines 3-4, "the amount of Fe ions dissolved into the treatment bath" lacks antecedent basis.

lines 5-6, it is unclear what is meant by "in which said steel material in the form of the article".

line 6, "the anode" lacks antecedent basis.

lines 4-5, it appears that the "anodic treatment" is further limiting the electrolytic treatment recited in claim 1, line 5. However, it is unclear if it is.

lines 6-8, "the amount of Fe ions that dissolve in the treatment bath from an Fe electrode" lacks antecedent basis.

line 8, it appears that the "cathodic treatment" is further limiting the electrolytic treatment recited in claim 1, line 5. However, it is unclear if it is.

Claim 5

lines 2-4, "the electrode used in electrolysis for making the ORP of the phosphate chemical treatment bath equal to or greater than 700 mV" lacks antecedent basis.

Claim 8

lines 2-4, it appears that the "metal ions that form a complex with phosphoric acid and phosphate ions in the phosphate chemical treatment bath" are the same as the metal ions recited in claim 1, line 10. However, it is unclear if they are.

line 4, the word "preferably" is indefinite.

line 5, the word "type" is indefinite.

Claim 9

lines 2-4, it is unclear how the NO, NO_2 and/or N_2O_4 gases are removed from the treatment bath when the treatment bath is not recited as being in the electrolytic treatment tank.

lines 5-8, it is unclear how the treatment tank is separated into an electrolytic treatment tank that carries out electrolytic treatment and an auxiliary tank that does not carry out electrolytic treatment. How can one tank do this?

line 6, it appears that the "electrolytic treatment" is the same as that recited in claim 1, line 1. However, it is unclear if it is.

line 8, it appears that the "electrolytic treatment" is the same as that recited in claim 1, line 1. However, it is unclear if it is.

line 10, what is the treatment liquid? Where did it come from? See also claim 12, line 3; and claim 13, lines 3, 5-6 and 8.

lines 10-11, it is unclear what is meant by " the above two tanks".

line 12, it appears that the "NO, NO_2 and/or N_2O_4 gas formed in the treatment bath accompanying electrolytic treatment from the treatment bath" is the same as the NO, NO_2 and/or N_2O_4 gases generated and dissolved in an electrolytic treatment tank recited in claim 9, lines 2-4. However, it is unclear if it is.

line 13, it appears that the "electrolytic treatment" is the same as that recited in claim 9, line 6. However, it is unclear if it is.

Claim 10

line 3, it appears that the "electrolytic treatment" is the same as that recited in

claim 9, line 6. However, it is unclear if it is. If it is, then it is suggested that the word -- the -- be inserted after the word "out".

Claim 12

line 4, it appears that the "electrolytic treatment" is the same as that recited in claim 9, line 8. However, it is unclear if it is.

Claim 13

lines 2-8, it is unclear what this step is further limiting in parent claim 9.

lines 7-8, it appears that the "gases in the form of nitrogen oxides" are the same as those recited in claim 9, lines 2-4. However, it is unclear if they are.

Claim 14

line 3, it appears that "840 mV" should be -- -840 mV --. However, it is unclear if it should be.

Claim 15

lines 3-4, "the above ORP value" lacks antecedent basis.

lines 4-5, "the amount and/or composition of replenishing chemical" lacks

antecedent basis.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **1-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **EP 597,131** in combination with **Matsuda** (US Patent No. 4,565,585).

The EP reference teaches an electrolytic phosphate chemical treatment method of forming a film composed of a phosphate compound and a metal that is reduced and precipitated from an ionic state on the surface of a metal material article to be treated (page 3, lines 12-43, esp., line 25), the method comprising the steps of:

(a) performing electrolytic treatment on said article to be treated in a phosphate chemical treatment bath (page 6, lines 1-29); and

(b) contacting said metal material having electrical conductivity with said phosphate chemical treatment bath containing phosphate ions, phosphoric acid, nitrate ions, metal ions that form a complex with phosphate ions in said phosphate chemical treatment bath, and metal ions for which the dissolution-precipitation equilibrium potential at which ions dissolved in said phosphate chemical treatment bath are reduced and precipitate as metal is equal to or greater than -830 mV, which is the cathodic

reaction decomposition potential of the solvent in the form of water when indicated as the hydrogen standard electrode potential, and is substantially free of metal ions other than those which are a component of the film (pages 14-15, Example 1, esp. page 15, lines 6-11);

wherein the ORP (oxidation-reduction potential) of said phosphate chemical treatment bath (indicated as the potential relative to a standard hydrogen electrode) is 250-650 mV (pages 14-15, Example 1; and page 11, lines 5-9).

The electrolytic treatment preferably uses for the electrode material (= zinc) that dissolves in the treatment bath a metal that forms a complex with phosphoric acid and phosphate ions in the phosphate chemical treatment bath (= $3(Zn^{2+}, Fe^{2+}) + 2H_2PO_4^- \rightarrow (Zn, Fe)_3 + 4H^+$; page 3, line 25; page 6, lines 12-15; and page 7, lines 10-15).

When performing cathodic treatment of said article to be treated, a Fe electrode is used as the electrode that dissolves in the treatment bath (page 9, line 29-38).

The article to be treated is a steel material (pages 13 and 14, Tables 2 and 3).

The metal ions that form a complex with phosphoric acid and phosphate ions in the phosphate chemical treatment bath are preferably at least one type of Zn, Fe, Mn or Ca ions (= Zn^{2+} and Fe^{2+}) [page 3, line 25; page 7, lines 10-15; pages 14-15, Example 1].

The NO, NO_2 and/or N_2O_4 gases generated and dissolved in an electrolytic treatment tank are removed from the treatment bath by separating the treatment tank into an electrolytic treatment tank **1** that carries out electrolytic treatment and an

auxiliary tank **3** that does not carry out electrolytic treatment, circulating the treatment bath between the two tanks, and providing a mechanism that opens treatment liquid to the atmosphere either between the above two tanks or within the two tanks, as a means of separating NO, NO_2 and/or N_2O_4 gas formed in the treatment bath accompanying electrolytic treatment from the treatment bath (page 8, lines 31-36; and Fig. 1).

The method having a liquid circulation circuit **2** that removes a portion of the treatment liquid at a location prior to being introduced into a filter material in a filter **3**, exposes the removed treatment liquid to the atmosphere (at **14**), and returns it to the electrolytic treatment tank **13** after removing gases in the form of nitrogen oxides present in the treatment liquid (page 9, lines 35-38; and Fig. 3).

A filter **3** having a mechanism that filters the treatment liquid is used for the auxiliary tank that does not carry out electrolytic treatment (page 8, lines 31-36; and Fig. 1).

The EP reference does not teach wherein the ORP is maintained at equal to or greater than 700 mV.

However, Matsuda teaches an electrolytic phosphate chemical treatment method of forming a film composed of a phosphate compound and a metal that is reduced and precipitated from an ionic state on the surface of a metal material article to be treated wherein the ORP is maintained at equal to or greater than 700 mV (col. 5, lines 54-60;

and col. 7, lines 3-10).

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the method of the EP reference with wherein the ORP is maintained at equal to or greater than 700 mV because using an ORP in such methods is conventional in the art as taught by Matsuda (col. 5, lines 54-60; and col. 7, lines 3-10).

Furthermore, the EP reference teaches an ORP of 560 mV or greater (page 22, Table 4).

As to wherein the amount of Fe ions dissolved into the treatment bath from an Fe electrode is controlled in order to make said ORP of the phosphate chemical treatment bath equal to or greater than 700 mV, the EP reference teaches that the conversion of $Fe^{2+} \rightarrow Fe^{3+}$ controls the ORP of the treatment bath within a prescribed range of 560 mV or greater (page 9, lines 35-38). Thus, the amount of Fe ions dissolved into the treatment bath is a result-effective variable and one skilled in the art has the skill to calculate the amount that would determine the success of the desired reaction to occur, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

As to wherein the amount of Fe ions dissolved into the treatment bath in anodic

treatment in which said steel material in the form of the article to be treated is dissolved as the anode, and the amount of Fe ions that dissolve in the treatment bath from an Fe electrode in cathodic treatment are controlled so that the ORP of the phosphate chemical treatment bath is equal to or greater than 700 mV, the EP reference teaches that the conversion of $Fe^{2+} \rightarrow Fe^{3+}$ controls the ORP of the treatment bath within a prescribed range of 560 mV or greater (page 9, lines 35-38). Thus, the amount of Fe ions dissolved into the treatment bath is a result-effective variable and one skilled in the art has the skill to calculate the amount that would determine the success of the desired reaction to occur, i.e., the conversion of $Fe^{2+} \rightarrow Fe^{3+}$, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

As to wherein the electrode used in electrolysis for making the ORP of the phosphate chemical treatment bath equal to or greater than 700 mV is an insoluble metal material, this is well within the skill of the artisan because this would have stabilized the chemical reactions in the bath so that bath control is facilitated.

As to wherein a chemical that contains Fe ions which replenishes the phosphate chemical treatment bath is an Fe-phosphate complex in order to make the ORP of said phosphate chemical treatment bath equal to or greater than 700 mV, the EP reference teaches an anode reaction of $3(Zn^{2+}, Fe^{2+}) + 2H_2PO_4^- \rightarrow (Zn, Fe)_3 + 4H^+$ (page 3, line 25; and page 7, lines 10-15). It appears that these Fe-phosphate complexes would have

made the ORP of said phosphate chemical treatment bath equal to or greater than 700 mV.

It has been held that a newly discovered use or function of components does not necessarily mean the system is unobvious since this use or function may be inherent in the prior art. *Ex parte Pfeiffer* 135 USPQ 31.

As to wherein the ORP of the phosphate chemical treatment bath is equal to or greater than 770 mV; and wherein the ORP of the treatment bath is equal to or greater than 840 mV, using an ORP in such methods is conventional in the art as taught by Matsuda (col. 5, lines 54-60; and col. 7, lines 3-10).

Furthermore, the EP reference teaches an ORP of 560 mV or greater (page 22, Table 4).

Furthermore, the ORP is a result-effective variable and one skilled in the art has the skill to calculate the ORP that would determine the success of the desired reaction to occur, e.g., preventing the formation of sludge in the bath, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

As to wherein the auxiliary tank that does not carry out electrolytic treatment has a mechanism in which the treatment liquid is passed through a permeable solid structure; and wherein the solid structure is a film, this is well within the skill of the artisan because a permeable film in a filter is deemed to be a conventional structure in

the art. The permeable film would have trapped the contaminants in the bath and passed a purified bath.

Furthermore, it does not appear that Applicants have invented a filter comprising a permeable film, unless proven otherwise.

As to wherein the treatment bath is maintained in a constant state by measuring the above ORP value of the treatment bath and changing the amount and/or composition of replenishing chemical corresponding to the change in that value, this is well within the skill of the artisan because the EP reference teaches controlling the ORP in the treatment bath within a prescribed range of 560 mV or greater (page 9, lines 35-38). Matsuda teaches that the ORP is controlled by measuring the above ORP value of the treatment bath and changing the amount and/or composition of replenishing chemical corresponding to the change in that value (col. 9, line 59 to col. 10, lines 12).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (703) 308-3818. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310

for regular communications and (703) 873-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1495.

Edna Wong
Primary Examiner
Art Unit 1753

EW
May 31, 2003